

THE NIGRISCAPUS GROUP OF VENTURIA
(HYMENOPTERA: ICHNEUMONIDAE)

By

David B. Wahl
Department of Entomology
University of Kansas

ABSTRACT

Descriptions, figures, and a key are given for fifteen species of the *Nigriscapus* species group of *Venturia*, all of which are confined to the New World, the majority being Neotropical. Fourteen species (*V. bicarinata*, *catarinensis*, *catoptron*, *citriscapus*, *compressa*, *depressa*, *genalis*, *longicauda*, *musae*, *nitida*, *plaumanni*, *tetragona*, *tezcatlipocai*, *townesorum*) are described as new, and the remaining species, *nigriscapus* (Viereck) is redescribed. The characters of the group are analyzed and a tentative phylogeny presented.

ACKNOWLEDGEMENTS

I express my gratitude to C. D. Michener of the University of Kansas for his advice, encouragement, and suggestions throughout this study. My thanks also go to George W. Byers of the University of Kansas for carefully reading the manuscript. The computer skills of Robert W. Brooks of the University of Kansas were of great help in the preparation of camera-ready copy. I am especially appreciative of the help given by Henry and Marjorie Townes of the American Entomological Institute, Ann Arbor, Michigan, for initial discussions concerning the investigation and for lending most of the specimens used. I am indebted to Sydney Cameron for her advice and support during the investigation.

INTRODUCTION

The *Nigriscapus* Group of the genus *Venturia* (Ichneumonidae: Porizontinae) consists of fifteen species, all restricted to the New World, and all but one tropical. *Venturia nigriscapus* (Viereck) is the only species previously described. Available information indicates that they are parasitoids of moderate-sized Macrolepidoptera. Although lack of detailed collection records precludes an analysis of habitats, they are absent in deserts and at least one species occurs in seasonally cold areas.

Preliminary results indicate that the *Nigriscapus* Group (characterized below) is monophyletic (sensu Hennig). Until *Venturia* is examined on a world-wide basis and its phylogeny better known, the taxon is best regarded as an informal but monophyletic assemblage of species.

MATERIALS, METHODS, AND TERMINOLOGY

Most specimens examined for this study were borrowed from the following collections; I am indebted to the curators listed (acronyms used are either from Arnett and Samuelson (1969) or consistent with their style):

California Academy of Sciences (CASC): San Francisco, California (Dr. P.A. Arnaud, Jr.).

Canadian National Collections (CNCI): Ottawa, Ontario (Dr. John Barron).

Fundación e Instituto Miguel Lillo (FIML): Universidad Nacional de Tucumán, San Miguel de Tucumán, Argentina (Dr. A. Willink).

Museum of Comparative Zoology (MCZC): Harvard University, Cambridge, Massachusetts (Dr. R. J. McGinley).

Henry and Marjorie Townes (HMTC): 5950 Warren Road, Ann Arbor, Michigan.

National Museum of Natural History (USNM): Washington, D.C. (Dr. Arnold Menke).

The terminology used for structures is mostly that of Townes (1969). Gena is used in place of "temple"; malar space is similarly substituted for "cheek". The mesopleural depression immediately anterior and ventral to the speculum is referred to as the scrobal groove (figs. 4-5), assuming that the "mesopleural fovea" is homologous to the episternal scrobe of other Hymenoptera (C. D. Michener, 1944, and pers. comm.). Mesosoma and metasoma are used to refer to the apparent thorax and abdomen respectively; the term first metasomal segment applies to the second true abdominal segment. Reference to the orientation of the various parts of the body follows Townes (1969), in that the legs are considered to be stretched out horizontally at right angles to the body. For the purposes of this paper, the vertex does not include the ocellar triangle and is considered that region between the lateral ocellus and the summit of the compound eye.

The surface sculpture between punctures on the head and mesosoma is of the type referred to by Harris (1979) as granulate. This varies in strength, from strongly developed to weak (with only shallow grooves present) to absent (appearing smooth and polished even at high (80x) magnification). Coarse punctures have a diameter of about 0.30 times the greatest diameter of the lateral ocellus; moderate-sized punctures have a diameter of about 0.15 times the greatest diameter of the lateral ocellus.

Coloration of the body parts, especially that of the metasoma, can be affected by the amount of oils on the specimen (from internal or other sources); oily specimens are generally darker and often exhibit irregular fuscous areas on the normally brownish-red portions of the metasoma. The color of the metasomal ventral intersegmental membranes is yellowish. The color of the veins of the fore and hind wings, both dorsally and ventrally, is dark brown, although occasional specimens are ventrally brownish-white.

In males, the carinae and general surface sculpturing of the propodeum are more pronounced; the areola and petiolar area are narrower than in the female. While there are differences in the outlines of the propodea, the problem of viewing each specimen in the same orientation

and the difficulty of attaining a defined edge (due to the sloping sides of the structure) should be kept in mind.

Most measurements are self-explanatory. The malar space is measured from the upper articulation of the mandible to the lower margin of the compound eye. Width of the gena relative to the eye is measured in lateral view; the resulting value is only approximate. The length of the ovipositor, if its base is hidden by enveloping terga, is estimated relative to the position of the apices of the valvifers and is believed to be fairly accurate. Mesopleural punctation is measured in an area immediately below the speculum (see circled area in fig. 4). When the lengths of the body, wing, and ovipositor are given, the values in parentheses are those of the holotype or allotype.

RELATIONSHIPS

Venturia (synonyms: Idechthis, Devorgilla, Balcarcia, Notamorphota, Exidechthis) has been generically described in detail by Townes (1969) and Gupta and Maheshwary (1977) and it is unnecessary to repeat their descriptions and generic synonymy. The features that readily distinguish Venturia from other porizontines are:

1. Eye not emarginate opposite antennal socket.
2. Gena wide, not receding immediately behind eyes (as in Casinaria or Charops).
3. Propodeum without median longitudinal depression, its apex usually reaching at least middle of hind coxa; second lateral area usually defined by carinae.
4. First metasomal segment: postpetiole without carinae; petiole cylindrical, suture separating first tergum from sternum in middle of lateral aspect; first tergum without lateral groove (glymma), or with only very faint traces.
5. Ovipositor usually long, 2-3 times apical depth of metasoma.

The existence of a distinct group of largely Neotropical Venturia, with nigriscapus (Vier.) as the only described representative, has been recognized by ichneumonid specialists for some time (H. K. Townes, pers. comm.). The only literature reference is that of Carlson (1979, p. 634), who noted the existence of such a group.

Polarities of characters for the Nigriscapus Group were determined by out-group comparison (examination of related taxa-- see Wiley (1981) and Watrous and Wheeler (1981) for extended discussion). Although the phylogeny of Venturia and related genera has not been analyzed in detail, Venturia is an apparently monophyletic group (sensu Hennig) that, like Sinophorus, probably originated in the very large and paraphyletic genus Campoplex. Finlayson (1975) cites several larval characters that suggest a possible relationship with Sinophorus. Until these can be analyzed more fully in relation to other porizontine characters, I will, on the basis of my observations of adult morphology, consider the sister-group of Venturia to be within Campoplex, as currently recognized. Accordingly, I have used Campoplex, Sinophorus, and other species of Venturia as outgroups. The following is a list of characters considered to be apomorphic for the Nigriscapus Group, with comments on the bases for decisions on character polarities.

1. Face and clypeus coarsely granulosopunctate. (Facial and clypeal punctation fine, not coarse, in outgroups.)
2. Malar space 0.5-0.6 times basal width of mandible. (Usually 0.2-0.3 in other Venturia species, often 0.5 or larger in Campoplex and Sinophorus.)
3. Gena wide and flat, 1.4-1.6 times as wide across middle as across eye, receding in dorsal view as in fig. 6. (1.7-3.0 times as long as eye in other Venturia species, near latter value in majority of species; gena receding in dorsal view as in figs. 7-8; gena often wide in Campoplex and Sinophorus, but not flattened.)
4. Fore wing with nervulus distal to basal vein by about 0.3 times its length (fig. 1). (Opposite or slightly distal in outgroups.)
5. Postnervulus intercepted at upper 0.3 by subdiscoideus (fig. 1). (Intercepted at or near middle in outgroups.)
6. Lower division of metapleurum coarsely rugosopunctate with large shallow punctures, at least on the lower 0.3-0.5. (Almost always closely punctate on shining or granulate surface in outgroups; if rugae are present next to submetapleural carina, they are weak, not high and strong.)
7. First metasomal segment long and straight (or upcurved in catoptron) in lateral profile (fig. 1) with width of postpetiole not much greater than that of petiole (fig. 9). (Campoplex, Sinophorus, and most Venturia usually have postpetiole wider than petiole (fig. 10); most Venturia species have the petiole relatively shorter and postpetiole more convex (fig. 2).)
8. Second metasomal segment long and narrow with width of apex 0.3-0.4 times length of segment. (Most Venturia species, and all Campoplex and Sinophorus, have the segment much shorter and wider; remaining Venturia not so narrow or relatively elongate.)
9. Metasoma narrowly compressed, as in Ophion or the Anomaloniinae. (This condition approached by only a few Venturia.)
10. Ovipositor 1.7-2.1 times length of hind femur. (Ovipositor usually 2.3-3.0 times length of hind femur in most Campoplex, Sinophorus, and other Venturia species, with most nearer latter value.)
11. Body length 9.2-14.2 mm, with most species 10.5-12.0 mm. (Most Campoplex and Sinophorus 5-7 mm in length; other Venturia range from 3.9-9 mm in length, most being 6-7 mm.)

Only characters 1, 5, 6, and the upper range of body size are unique to the Nigriscapus Group. Characters 2 and 3 may be found in perhaps one-quarter of the species of Venturia. The remaining characters were each found only in several species. No Venturia species outside this group possesses all of the above characters. Species may be found that have one or two of them but they will be readily excluded by the lack of the others.

The relationship of the Nigriscapus Group to the rest of the genus is not clear. Possibly it is related to several as yet undescribed Nearctic species, but a more comprehensive analysis of the genus must be undertaken.

Characters that are apomorphic within the Nigriscapus Group are:

1. Malar space 0.6-0.7 as long as mandibular width. (0.5-0.6 in Campoplex and Sinophorus; usually about 0.3 in other Venturia species; on the basis of the distribution of a malar space of 0.5, I assume this to be the primitive state for the group, although an initial state of 0.6 and subsequent reversal to 0.5 is equally possible.)
2. Occipital carina medially straight. (Arched in outgroups.)
3. Transverse rugae on polished lateral area of pronotum adjacent to collar weak or absent. (Rugae usually present and strong in outgroups; if absent, pronotum granulate, not polished.)
4. Upper posterior corner of lateral area of pronotum with areas between punctures smooth or weakly granulate. (Areas between punctures strongly granulate in outgroups.)
5. Spaces between punctures on mesopleurum polished and smooth. (Spaces usually distinctly granulate in Venturia, Campoplex, and Sinophorus.)
6. Upper anterior region of mesopleurum with area immediately adjacent to scrobal groove having transverse rugae absent or reduced and few or no punctures; surface granulation absent so that this area appears to be an extension of speculum (see outlined area in fig. 5 for indication of total expanse of polished area). (In other members of the Nigriscapus Group and in other Venturia, Campoplex, and all but one of the examined Sinophorus, the area in question has extensions of the scrobal groove's transverse rugae plus a normal complement of mesopleural punctation and surface sculpture.)
7. Scutellum coarsely punctate, surface polished. (This is a partial reversal of one of the apomorphies of the Nigriscapus Group; other species of Venturia and Campoplex have small punctures on a granulate surface; a few Sinophorus have small punctures on a smooth surface.)
8. Mesopleurum with large shallow punctures separated by about 0.2 times their diameters or confluent. (Outgroups have small deep punctures usually separated by more than 0.2 times their diameters.)
9. Scape, pedicel, tegula, coxae, and hind femur black or fuscous; see discussion of nigriscapus (Vier.) for reasons why it is considered to possess this character. (In other groups of Venturia and Campoplex, the majority have the fore and middle coxae yellow or, if all coxae are black, the scape, pedicel, and tegula usually are not dark; the joint possession of dark coxae, scape, pedicel, and tegula is very rare in Venturia; Sinophorus tends to have the above parts fuscous-black, but rarely has the hind femur darkened as well.)
10. Hind femur fuscous. (This character seems to be independent of character 11; fuscous coloration of the hind femur is rare when the fore and middle leg coloration is yellowish.)
11. Metapleurum with lower division with at least upper half coarsely punctate, rugae weak or absent.

(The plesiomorphic condition, which is one of the apomorphies of the *Nigriscapus* Group, is to have the rugae more noticeable than the punctures, forming a series of parallel low vertical ridges.)

12. Propodeal carinae pattern as in figs. 23-25 and 28: median and longitudinal carinae tending to be weak and irregular in height and outline; basal transverse carina curved laterally, not angular; basal section of areola, between median longitudinal carinae, relatively wide (compared to, for example, figs. 19 or 27); median longitudinal carinae parallel, not diverging laterally at their midpoints. (This particular configuration is not found in outgroups.)
13. Second lateral area of propodeum short and rectangular (figs. 12, 15, 20 and 23). (This configuration is limited to *V. genalis*, *tetragona*, and males of *nigriscapus* and *townesorum*; it has apparently evolved twice.)

A cladogram for the group (fig. 29) was generated using the "Wagner 78" parsimony program of James S. Farris. This was identical to one previously done by hand.

A weak point of the analysis results from the lack of male specimens for *musae* and *longicauda*. It is not known if *musae* males exhibit a squaring of the second lateral area, or if males of *longicauda* possess large and shallow punctures on the mesopleurum. I have, in the absence of information, treated each in the negative; further information could change the cladogram.

Autapomorphies that distinguish each species are not shown on the cladograms except when the character appears elsewhere within the species group.

A considerable number of the species recognized herein are described from only one specimen or a limited series. Decisions as to specific status were made on the basis of character variability in those species represented by relatively abundant material.

Some interesting patterns become evident when distribution data are added to the cladogram, which I view as a statement of immediate common ancestry. *V. nigriscapus*, found in eastern North America (and possibly Mexico) is the sister species to a Central American species, *townesorum*. These species are most closely related to two Central American species, *musae* and *longicauda*. This pattern is found in a wide number of plant and animal taxa (Rosen, 1978). Unfortunately, as Rosen points out, present knowledge does not allow any temporal boundaries to be set to these patterns; they may not even be due to a common event or events. *V. nitida*, a member of a subgroup that is otherwise South American, appears to have dispersed through North and Central America, whose fauna otherwise consists only of the relatively primitive *nigriscapus*, *musae*, *townesorum*, and *longicauda*. *V. tezcatlipocai*, known at present from only one location in Mexico, is perhaps derived from *nitida*, or a similar common ancestor.

Key to the Species of the Nigriscapus Group

1. Fore and middle coxae with basal 0.7 black or dark brown.
-----2
- Fore and middle coxae predominantly yellow, although with varying amounts of basal dark coloration.
-----6
2. Males (males of bicarinata and musae unknown).
-----3
- Females.
-----4
3. Postpetiole brownish-red, same color as metasomal segments 3-7; middle femur yellowish, apical 0.2 of dorsal surface brownish.
-----townesorum (p. 14)
- Postpetiole fuscous or deep brown; middle femur dark brown except for yellow median dorsal stripe.
-----nigriscapus (Viereck) (p. 10)
4. Scutellum with strong lateral carina extending its length; lateral areas of pronotum with transverse rugae present only as traces at lateral margins, central area smooth and shining; propodeal pattern as in fig. 24.
-----bicarinata (p. 23)
- Scutellum with lateral carinae distinct only to basal 0.3; lateral area of pronotum with strong transverse rugae; ventral surface of scape dark brown or fuscous; propodeal carinae pattern with juncture of areola and petiolar area indicated by a constriction, not as in fig. 24.
-----5
5. Propodeal carinae weak apically, petiolar area with reticulate rugae; mesopleural surface with weak granulation; middle femur yellowish, apical 0.2 of dorsal surface brownish; postpetiole brownish-red, same color as metasomal segments 3-7.
-----townesorum (p. 14)
- Propodeal carinae uniformly strong, petiolar area with strong transverse rugae; mesopleural surface with strong granulation; middle femur dark brown except for yellow median dorsal stripe; postpetiole fuscous or deep brown.
-----nigriscapus (Viereck) (p. 10)
6. Scape ventrally yellow or reddish-yellow.
-----7

- Scape ventrally dark brown or fuscous, sometimes with lighter apical area.
-----19
7. Central region of lateral area of pronotum extremely smooth and polished, with at most faint traces of transverse rugae; upper posterior lateral corner punctate, granulation absent between punctures.
-----8
- Central region of lateral area of pronotum with at least moderately distinct rugae; upper posterior lateral corner coarsely rugosopunctate, often with granulation between punctures.
-----9
8. Under edge of first metasomal segment strongly upcurved in profile (fig. 3); pronotum broadly triangular (fig. 4).
-----catoptron (p. 27)
- Under edge not strongly upcurved in profile; pronotum in lateral view long and narrow; propodeal carinae pattern as in fig. 27.
-----compressa (p. 29)
9. Scape reddish-yellow ventrally, at least basally.
-----10
- Scape yellow ventrally.
-----14
10. First metasomal segment brownish-red; petiole with darker areas bordering suture and basal 0.5 of dorsum.
-----11
- First metasomal segment with petiole and at least part of postpetiole fuscous, postpetiole occasionally deep brownish-red.
-----12
11. Mesopleural punctures coarse and shallow, separated by about 0.2 times their diameter or confluent; apex of areola short and squared (fig. 20); malar space about 0.7 as long as basal mandibular width; petiolar area with strong transverse rugae, not reticulate or striate-reticulate; fore wing about 8.0 mm long.
-----genalis (p. 19)
- Mesopleural punctures smaller and deeper, separated by 0.3-0.8 times their diameter; apex of areola larger and narrowed (fig. 23); malar space about 0.6; petiolar area with weak rugae, either transverse or reticulate or combination of both; fore wing 4.7-6.0 mm long.
-----citriscapus (p. 22)

12. Upper half of lower division of metapleurum coarsely rugosopunctate; fore wing 5.0-6.1 mm long.
-----plaumanni (p. 16)
- Upper half of lower division of metapleurum coarsely punctate; fore wing 4.6-5.0 mm long.
-----13
13. Propodeal carinae as in fig. 25: juncture of areola and petiolar area not constricted (or only weakly so in some males), median-longitudinal carinae roughly parallel and often weak and irregular in height and outline; mesopleural surface occasionally weakly granulate.
-----some specimens of nitida (p. 24)
- Propodeal carinae as in fig. 26: juncture of areola and petiolar area constricted, median longitudinal carinae strong and regular in height and outline; mesopleural surface not granulate.
-----tezcatlipocai (p. 26)
14. First metasomal segment with at least petiole and sometimes part of postpetiole black or piceous, postpetiole brownish-red either completely or just at apex.
-----15
- First metasomal segment brownish-red, although basal 0.6 can have traces of darkening.
-----18
15. Basal transverse carina strong, median and lateral longitudinal carinae weak and hard to distinguish from sculpture of petiolar and lateral areas; areola-petiolar area reticulate.
-----depressa (p. 21)
- All propodeal carinae strong and easily distinguishable from sculpture of adjoining areas; areola-petiolar area with strong transverse rugae.
-----16
16. Propodeal carinae as in fig. 22, second lateral area short and rectangular; upper 0.5 of lateral region of pronotum with rugae reduced, producing smooth and occasionally punctate surface; metapleurum coarsely rugosopunctate.
-----tetragona (p. 20)

- Propodeal carinae as in figs. 18 and 25, second lateral area more elongate; upper 0.5 of lateral region of pronotum usually with distinct rugae.-----17
17. Basal outer corner of second lateral area prolonged (fig. 18); intersection of areola and petiolar area constricted, especially in males; areas between mesopleural punctures moderately granulate.-----catarinensis (p. 17)
- Basal outer corner of second lateral area not prolonged; intersection of areola and petiolar area not constricted; areas between mesopleural punctures not granulate or only weakly.-----nitida (p. 24)
18. Propodeal carinae strong basally, becoming weaker apically (fig. 16); petiolar area of propodeum reticulate; mesopleural punctures coarse and shallow, separated by about 0.2-0.5 their diameter; ovipositor 1.8 as long as hind femur; fore wing 6.6 mm long.-----musae (p. 13)
- Propodeal carinae strong for length of propodeum; petiolar area of propodeum with transverse rugae; mesopleural punctures moderate, separated by about 0.3-0.7 times their diameter; ovipositor about 2.1 as long as hind femur; fore wing 4.9 mm long.-----longicauda (p. 15)
19. Hind femur usually fuscous or dark brown; mesopleurum with spaces between punctures smooth or weakly granulate; median longitudinal carinae usually weaker than basal transverse carina; midlines of metasomal segments 3-7 fuscous.-----nitida (p. 24)
- Hind femur brownish-red; mesopleurum with spaces between punctures moderately granulate; median longitudinal carinae usually about as strong as basal transverse carina; metasomal segments 3-7 brownish-red, midlines sometimes with fuscous hints.-----nigriscapus (Viereck) (p. 10)

Venturia nigriscapus (Viereck)
(figs. 6,9,11-12)

Idechthis nigriscapus Viereck, 1921. Psyche 28: 77. ♀ (MCZC)
Idechthis mimicus Viereck, 1926. Roy. Soc. Canada, Proc. and Trans. (3) 20 (5): 185. ♂ (CNCI)

DIAGNOSIS. The medially straight occipital carina and lack of an apparent specular extension differentiates nigriscapus from the majority of species; separable from the related musae and longicauda by the fuscous ventral surface of the scape, black first metasomal segment with the apex of the postpetiole brownish-red, and strong propodeal carinae. Most North American specimens have the basal 0.5 of the fore and middle

coxae yellow, and the middle and hind femora brownish-red; specimens with fuscous coxae from the northeastern United States, southeastern Canada, and Mexico also have the middle and hind femora dark brown. The related townesorum also has fuscous coxae, but has the middle femur yellow and the postpetiole brownish-red.

FEMALE. Structure: 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 40-44 flagellomeres. 3. Occipital carina medially straight. 4. Ocellocular distance about equal to greatest diameter of lateral ocellus; ocellar region granulosopunctate with linear depression perpendicular to median ocellus, its length about 0.7 times greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region impunctate, shining, with strong transverse rugae. 6. Scutellum with anterior half rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below and in front of speculum moderate-sized, separated by 0.3-0.5 their diameter, on shining, strongly granulate surface. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeal carinae (fig. 11) high and strong and, except for basal transverse carina, slightly irregular in height and outline; lateral longitudinal carina usually weaker than median longitudinal carina. Areola impunctate and shining, with few rugulae intruding laterally; petiolar area with strong transverse rugae. 11. Ovipositor about 1.8 times as long as hind femur. **Color** (for typical form in eastern United States): Black, the following pale yellow: mandible except for brown of apex and base; palpi; tegula; apical 0.5 of fore and middle coxae and about apical 0.3 of hind coxa; trochanters except for (usually) dark brown of hind first trochanter; fore and middle tibiae and femora except for lateral faint brown stripes on middle femur and tibia. Fore tarsus light brownish-yellow. Middle tarsus light brown. Scape and pedicel light brown to fuscous, except for lighter apices. Hind femur brownish-red, occasionally yellowish on ventral surface and at extreme apex. Hind tibia and hind tarsus dark brown. Hind tibial spurs yellow. First metasomal segment ranging from black to piceous, extreme apex of postpetiole sometimes deep brownish-red. Basal 0.3 and midline to basal 0.8 of second tergum, basal 0.3 and midline to basal 0.5 of third tergum, and occasionally midlines of remaining terga, fuscous. Terga otherwise light brownish-red. Length: 9.4-11.3 mm (10.9 mm); fore wing 4.9-6.0 mm (5.5 mm); ovipositor 3.1-3.8 mm (3.5 mm).

MALE. Structure: Similar to female except: 7. Mesopleural punctures moderate to coarse in size, separated by about 0.3 times their diameter, on strongly granulate surface. 9. All propodeal carinae strong and high, irregular in height and outline; transverse rugae of areolar area almost same height and width as carinae; propodeal carinae pattern as in fig. 12, combined areola-petiolar area narrower, and with tendency for second lateral area to become squarish in outline. **Color:** Similar to female, including same range of variation. Claspers same brownish-red as abdominal terga. **Length:** 9.0-11.2 mm; forewing 4.4-5.5 mm.

SPECIMENS EXAMINED. 77 females, 31 males.

TYPE MATERIAL. Holotype female of nigriscapus, VIRGINIA (Arlington Co., Glencarlyn, 30 June, on Ceanothus, Nathan Banks) (MCZC type no. 11187). Four female paratypes, VIRGINIA (same data as holotype, except collected 8 June and 2 July; Fairfax Co., Great Falls, 25 June, Nathan Banks; Fairfax Co., Falls Church, 11 June, Nathan Banks) (MCZC). Note: paratypes labelled as such but not formally designated in original description. Holotype male of mimicus, CANADA (Ontario: Georgetown, 27 Aug. 1893) (CNCI type no. 1768). I examined the types of nigriscapus and mimicus in 1982.

DISTRIBUTION. Eastern North America (fig. 30) as far west as Arkansas (the latter fide Carlson, 1979; p. 634), and possibly Mexico (Oaxaca).

COMMENT. The nature and amount of dark coloration on the fore and middle coxae varies considerably, ranging from the dark area being brownish-black and covering the basal 0.5 of the hind coxa and basal 0.7 of the middle coxa, to having the dark area light brown and covering only the basal 0.3 of both coxae. Intermediates may also be found with black and brown areas intermixed in the same coxa. The normally black or fuscous areas of the hind coxa and metasomal terga may be dark brownish-red. Also, the brownish-red of metasomal terga 2-3 may occasionally be either quite deep or very pale in color.

The difference in the mesopleural punctation between males and females can be quite striking.

The cephalic sclerites of the final-instar larva are figured in Finlayson (1975) and Short (1978).

Townes (1945) placed Idechthis mimicus Viereck as a synonym of nigriscapus. The type of I. mimicus is representative of individuals of nigriscapus in Michigan, New York, Quebec, and Ontario. This northern form differs from the more typical nigriscapus in the following: 1) the light area of mandible is brownish-yellow; 2) the basal 0.7-0.9 of the fore and middle coxae is black-fuscous; 3) the middle femur is brown to fuscous except for the extreme apex and a narrow yellow dorsal stripe; 4) the middle tibia ventrally and tarsus are dark brown; 5) the hind femur, except for the extreme base and apex, and tibia are fuscous. Due to the existence of intermediate specimens from the following locales, I believe that this northern form is only a regional color variant: 1) 2 males, St. Charles, Michigan (fig. 30, a); 2) 1 female, Barry Co., Michigan (fig. 30, b); 3) 1 female, Front Royal, Virginia (fig. 30, c). V. sokanakiakorum (Viereck) shows a similar geographic pattern of color variation. Specimens from Ohio, Michigan, and Canada have the mandible, and fore and middle coxae fuscous-dark brown, in contrast to the usual light yellow. In one Michigan locale, specimens are found exhibiting the extremes of color, as well as an intermediate condition of having the basal 0.7 of the coxa fuscous. Specimens of this species from a location in Ohio have the males possessing fuscous coxae, while females have light yellow ones. This is apparently paralleled in reverse by nigriscapus specimens from Ann Arbor, Michigan.

My preference is not to recognize these forms as subspecies; my views on the formal designation of subspecies are those of Wilson and Brown (1953).

A specimen from Mexico (Oaxaca: 85.5 km SW of Tuxtepec, 20 Oct. 1962, H. and M. Townes (HMTC)), is tentatively placed in this species.

The size, mesopleural punctation, and propodeal carinal pattern are similar to nigriscapus. The mandible, scape, tegula, coxa, middle first trochanter, middle tibia, and hind femur are fuscous; metasomal color pattern is the same as in nigriscapus. Except for the color of the mandible and trochanter, the pattern is the same as that of the northern dark form of nigriscapus.

Dates of collection are from late spring to mid-fall. The following are the earliest and latest dates: 25-28 April 1973 at Rapides Parish, Louisiana; 25-31 April 1976 at Athens, Georgia; 15-18 Oct. 1967 at New Concord, Ohio; 31 Oct. 1950 at Southern Pines, North Carolina.

Label data from specimens in the Canadian National Collection and the National Museum of Natural History state that this species has been reared from pupae of the following Noctuidae: Acronicta interrupta "form elizabetha", Bomalocha sp., Catacola sp., Plathypena scabra (F.) and Zale sp.

Venturia musae, sp. nov.
(fig. 16)

DIAGNOSIS. Lack of an apparent specular extension separates this species from the majority of the Nigriscapus Group. It may be distinguished from nigriscapus, longicauda, and townesorum by the yellow of the fore and middle coxae, yellow ventral surface of the scape, coarse mesopleural punctation, weak median and lateral longitudinal propodeal carinae, and brownish-red first metasomal segment.

FEMALE. Structure: 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 44-42 flagellomeres. 3. Occipital carina with short median part straight. 4. Ocellular distance about equal to greatest diameter of lateral ocellus; ocellar region coarsely granulosopunctate with linear depression composed of confluent punctures perpendicular to median ocellus, its length about 0.8 times greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region impunctate, shining, with strong transverse rugae. 6. Scutellum with anterior half of scutellum coarsely rugosopunctate. 7. Mesopleurum with coarse shallow punctures, punctures in central region immediately below and in front of speculum separated by 0.2-0.5 times their diameter, on shining, strongly granulate surface. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeal carinae (fig. 16) as follows: basal transverse carina, and median longitudinal carina basad of basal transverse carina, strong; other carinae weaker or hard to distinguish from strongly rugose propodeal surface. Anterior half of areola smooth with lateral rugulae; remainder of areola and petiolar area reticulate. 11. Ovipositor about 1.8 times as long as hind femur. Color: Black, the following pale yellow: mandible except base and apex; palpi; both scape and pedicel except for brown dorsal surface; tegula; fore and middle coxae except for dark brown of basal 0.3; hind coxa at apical 0.3 and median dorsal stripe; trochanters; fore and middle femora and tibiae except for faint lateral brown stripes; front tarsus except for brown apical tarsomere. Middle tarsus yellowish-brown. Hind femur

and tibia brownish-red with pale yellow ventral area of femur extending 0.5 of way up posterior lateral face. Hind tibial spurs yellowish-brown. First metasomal segment with petiole and postpetiole light brownish-red except for yellowish apex of postpetiole. Basal 0.8 of second tergum and basal 0.2 of third tergum fuscous. Terga otherwise yellowish-red. Length: 12.9 mm (13.7 mm); fore wing 6.9 mm (6.3 mm); ovipositor 4.3 mm.

MALE. Unknown.

TYPE MATERIAL. Female holotype, MEXICO (Veracruz: "Penuelas", with notation "at Laredo (Texas), 10 Dec. 1947, 45956, 48-1029, ex Lep pupa on banana") USNM). Female paratype, GUATEMALA (22 July 1935, with notation "at light in banana hold; Phila., PA, no. 27453") (USNM).

COMMENT. The paratype differs from the holotype in having the hind coxa completely black except for a thin band of yellow at the extreme apex, and in the darker color of the rest of the hind leg. Both specimens were apparently collected by plant quarantine inspectors.

ETYMOLOGY. The specific name is derived from the generic name of the banana, Musa, on which the unknown lepidopterous host was found.

Venturia townesorum, sp. nov.
(figs. 13-15)

DIAGNOSIS. Lack of an apparent specular extension differentiates townesorum from the majority of species. The fuscous coxae and ventral surface of the scape, moderate mesopleural punctation (in the female), and dark petiole distinguish this species from musae and longicauda. See the nigriscapus diagnosis to differentiate these two species.

FEMALE. Structure: 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 41 flagellomeres. 3. Occipital carina medially arched. 4. Ocellular distance about equal to greatest diameter of lateral ocellus; ocellar region moderately granulosopunctate. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region impunctate, shining, with strong transverse rugae; rugae narrowly connected in area adjacent to upper posterior corner. 6. Scutellum with anterior half coarsely rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below and in front of speculum separated by about 0.5 times their diameter, superimposed on shining, weakly granulate surface. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeum (fig. 13) with basal transverse carina and median longitudinal carina, from base of propodeum to apex of areola, strong; rest of carinae weak or absent. Areola smooth and impunctate, with transverse rugulae; petiolar area reticulate, becoming transversely striate toward apex. 10. Ovipositor about 1.7 times as long as hind femur. Color: Black, the following pale yellow: apical 0.2 of fore and middle coxae; trochanters except for brown of second trochanter of hind leg; fore and middle femora except for dark brown of apical 0.4 of dorsal surface of middle femur; fore tibia except for faint brownish stripe. The following yellowish-brown: mandible except for dark brown of base and apex; palpi; and fore tarsus. Scape,

pedicel, tegula, middle tibia, and middle tarsus, brown, except for dorsal yellow stripe extending length of tibia. Hind leg deep brownish-red except for pale yellow band at extreme base of femur. First metasomal segment with basal 0.7 of petiole piceous, rest of petiole and post-petiole brownish-red. Basal 0.5 of second tergum and extreme base of third tergum, dark brownish; terga otherwise brownish-red. Length: 10.6 mm; fore wing 5.2 mm; ovipositor 3.5 mm.

MALE. Structure: Differs from female as follows: 2. Antenna with 42-45 flagellomeres. 5. Pronotum with transverse lateral rugae weak. 7. Mesopleurum with punctures in central region immediately below and in front of speculum large and shallow, separated by about 0.3 times their diameter, on shining, strongly granulate surface. 9. Propodeal carinae (figs. 14 and 15) strong, irregular in height and width. Areola and petiolar area with strong transverse rugae. Second lateral area squarish in outline. Color: As in female, except mandible completely dark brown; basal 0.8 of first metasomal segment black; basal 0.7-0.8 of second tergum, basal 0.4 and extreme apex of third tergum, fuscous; midlines of terga 4-7 with fuscous hints. Length: 10.7-12.7 mm; fore wing 5.5-6.3 mm.

TYPE MATERIAL. Female holotype, MEXICO (San Luis Potosí: nr. El Naranjo, approximately 64 km W. Nuevo Morelos, 7 Oct. 1962, in oak forest, H. and M. Townes) (HMTTC). Allotype, PANAMÁ (Chiriquí: Bambito, nr. Volcan, 21 March 1965, S. and W. D. Duckworth) (USNM). Male paratype, MEXICO (Veracruz: Catemaco, 8 July 1969, R. E. Crutwell, with notation "emerged 2-VIII-1969 ex A. insulata") (USNM).

COMMENT. Based upon the sexually-based morphological differences in nigriscapus, I have associated the two male specimens with the holotype female of townesorum. The males' coarse and close mesopleural punctation, and the high and irregular propodeal carinae, suggest the male nigriscapus morphology relative to that of the female.

The shape of the second lateral area differs somewhat between the two male specimens (figs. 14 and 15). A similar range of variation is found among nigriscapus males.

The brownish-red coloration of the allotype's metasoma is deeper than that of the other two specimens. This is probably due to post-mortem changes.

The paratype is recorded as parasitizing an arctiid, Pareuchaetes insulata (Walker) (= Ammalo insulata). The host was collected on Chromolaena odorata (L.) R. M. King and H. Robison, a composite native to the Neotropics.

ETYMOLOGY. This species is named for Drs. Henry and Marjorie Townes in recognition of their studies of the Ichneumonidae.

Venturia longicauda, sp. nov.
(fig. 17)

DIAGNOSIS. Lack of an apparent specular extension differentiates longicauda from the majority of species. This species is separable from musae, nigriscapus, and townesorum by the yellow fore and middle coxae, yellow ventral surface of the scape, moderate mesopleural punctation, strong propodeal carinae, and brownish-red first metasomal segment.

FEMALE. Structure: 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 43 flagellomeres. 3. Occipital carina medially straight. 4. Ocellocular distance about equal to greatest diameter of lateral ocellus; ocellar region granulosopunctate with linear depression composed of several confluent punctures perpendicular to median ocellus, its length about 0.3 times greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region impunctate, shining, with strong transverse rugae; rugae narrowly connected in a few areas. 6. Scutellum with anterior half coarsely rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below and in front of speculum separated by 0.3-0.7 times their diameter, on shining, strongly granulate surface. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeal carinae (fig. 17) strong and distinct. Areola and petiolar area with strong, narrowly separated transverse rugae. 11. Ovipositor about 2.1 times as long as hind femur. Color: Black, the following pale yellow: mandible except dark brown of base and apex; palpi; both scape and pedicel except for brown dorsal surfaces; tegula; fore and middle coxae except dark brown extreme bases; remainder of fore and middle legs except for brownish-yellow fore tarsus and brown middle tarsus; hind coxa at apical 0.4 and median dorsal stripe; hind trochanters. Hind tarsus brown. Hind femur brownish-red with ventral area pale yellow, extending 0.4 of way up lateral faces. Hind tibia, except for ill-defined pale annulus occupying median 0.6, and tarsus, brown. Hind tibial spurs light brown. First metasomal segment with petiole and postpetiole light brownish-red, apex of postpetiole yellowish. Second terga with 0.5 of segment following basal 0.3, and basal 0.1 of third terga, brownish. Terga otherwise brownish-red. Length: 9.6 mm; fore wing 4.7 mm; ovipositor 3.5 mm.

MALE. Unknown.

TYPE MATERIAL. Female holotype, PANAMÁ (Colón: Margarita, June 1960, S. Breeland) (HMTTC).

ETYMOLOGY. From the Latin longus, long, plus cauda, tail, referring to the relatively long ovipositor. It is a noun in apposition to the generic name.

Venturia plaumanni, sp. nov.
(fig. 19)

DIAGNOSIS. Similar in size and coloration to catarinensis, but may be distinguished by the following: ventral surface of the scape brownish to reddish-yellow; hind first trochanter brown; hind coxa fuscous except for extreme apex; basal outer corner of the second lateral area not prolonged; areola-petiolar area not as constricted medially.

FEMALE. Structure: 1. Malar space about 0.6 as long as basal mandibular width. 2. Antenna with 41-43 flagellomeres. 3. Occipital carina medially straight. 4. Ocellocular distance about equal to greatest diameter of lateral ocellus; ocellar region coarsely granulosopunctate. 5. Pronotum with upper margin and upper posterior

corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region impunctate, shining, with moderate transverse rugae, rugae absent immediately adjacent to epomia. 6. Scutellum with anterior half coarsely rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below speculum separated by 0.3-0.8 times their diameter, on shining, weakly granulate surface; upper anterior region of mesopleurum immediately adjacent to scrobal groove having transverse rugae absent or weak and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeal carinae (fig. 19) strong, with longitudinal carinae irregular in height and outline. Areola fairly smooth with several rugulae; petiolar area reticulate to striate. 11. Ovipositor about 1.8 times as long as hind femur. Color: Black, the following pale yellow: mandible except for dark brown of base and apex; palpi; fore and middle coxae except for dark brown of basal 0.5 of ventral surfaces; extreme apex of hind coxa; remainder of fore and middle legs except for brownish-yellow of middle tarsi. Ventral surfaces of scape and pedicel range from dark brown to reddish-yellow. Tegula brown to brownish-yellow. Hind first trochanter entirely or dorsally brownish, second trochanter yellow. Hind femur, tibia, and tarsus, dark brown. Hind tibial spurs yellow. First metasomal segment piceous except for deep brownish-red of petiolar apex and postpetiole. Second tergum except for apical 0.2, basal 0.5 and midline of third tergum, and midlines of remaining terga fuscous; terga otherwise deep brownish-red. Length: 9.8-12.9 mm (12.3 mm); fore wing 5.0-6.1 mm (6.1 mm); ovipositor 3.1-3.9 mm (3.9 mm).

MALE. Structure: Similar to female, except that propodeum with carinae much stronger and higher. Color: As in female, except second through third metasomal terga, plus midlines and upper lateral areas of fourth through eighth terga, and gonoforcep, fuscous. Length: 9.3 mm; fore wing 4.7 mm.

TYPE MATERIAL. Female holotype, BRAZIL (Santa Catarina: Nova Teutonia, Oct. 1970, F. Plaumann) (HMTTC). Allotype, BRAZIL (Santa Catarina: Nova Teutonia, Dec. 1967, F. Plaumann) (HMTTC). Four female paratypes, same data as holotype, except collected: 15 Nov. 1952, 3 Dec. 1952, 22 Dec. 1958, 20 Jan. 1960 (CNCI).

COMMENT. Two female specimens, apparently belonging to this species, are from Argentina (Tucumán: Burruyacu, V. Padre Monte, 17 Jan.-7 Feb. 1948, R. Golbach (FIML)).

ETYMOLOGY. This species is named after the late Fritz Plaumann, a professional collector in Santa Catarina, Brazil, who obtained many of the specimens used in this study.

Venturia catarinensis, sp. nov.
(fig. 1,18)

DIAGNOSIS. This species may be distinguished from the similar *plaumanni* by the following: tegula, ventral surface of the scape, apical 0.2 and dorsal median stripe of the hind coxa, hind first trochanter, yellow; basal outer corner of the second lateral area

prolonged; areola-petiolar area constricted medially.

FEMALE. Structure: 1. Malar space about 0.6 as long as basal mandibular width. 2. Antenna with 44 flagellomeres. 3. Occipital carina medially straight. 4. Ocellocular distance about 0.8 times greatest diameter of lateral ocellus; ocellar region coarsely granulosopunctate. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region impunctate, shining, smooth to moderately striate toward upper and lower posterior corners. 6. Scutellum with anterior half coarsely rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below speculum separated by 0.2-0.5 times their diameter, on shining, weakly granulate surface; upper corner of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeal carinae (fig. 18) strong. Second lateral area with basal outer corner prolonged anteriorly. Areola smooth and shining with 2-5 transverse rugulae; entire petiolar region with strong transverse rugae; areola-petiolar area often constricted medially. 11. Ovipositor about 1.8 times as long as hind femur. Color: Black, the following pale yellow: mandible except dark brown of base and apex; palpi; scape except for brown dorsal surface; pedicel on ventral surface; tegula; fore and middle legs, except for dark brown of middle tarsus and extreme bases of coxae. Hind trochanters yellow except for faint brown of anterior face of first trochanter. Hind femur brownish-red with pale area on middle 0.3 of ventral face, sometimes extending nearly to base and apex. Hind tibia and tarsus dark brown to fuscous. Hind tibial spurs yellowish-brown. Petiole and approximately basal 0.7 of postpetiole piceous. Approximately basal 0.7 of second tergum, basal 0.3 and narrow dorsal longitudinal strip of third tergum, midlines of remaining terga, and ovipositor sheath, fuscous. Apical 0.3 of postpetiole and rest of terga, brownish-red. Length: 10.6-12.6 mm (12.8 mm); fore wing 5.5-6.5 mm (6.5 mm); ovipositor 3.6-4.1 mm (4.1 mm).

MALE. Structure: Differs from the female in the following: 5. Lateral region of pronotum with rugae much more pronounced, especially toward upper and lower posterior corners. 9. Propodeum with carinal patterns similar to female, but carinae stronger and higher. Color: As in female except brown and fuscous regions deeper in color; hind first trochanter entirely brown; dorsal fuscous regions of third through eighth terga extending at least one-third of way down lateral faces of terga. Gonoforcep fuscous except for brownish-red of basal median edge. Length: 11.3 mm (11.2 mm); fore wing 5.5 mm (5.4 mm).

TYPE MATERIAL. Female holotype, BRAZIL (Santa Catarina: Nova Teutonia, 300-500 m, 25 March 1960, F. Plaumann) (HMTc). Allotype, BRAZIL (Guanabara: Reprêsa Rio Grande, August 1966, M. Alvarenga) (HMTc). Twenty-one female paratypes, one male paratype, BRAZIL (same data as for holotype except collected: 18 Dec. 1953, 27 Nov. 1957, 22 Oct. 1958, 22 Nov. 1958, 30 Nov. 1958, 16 Dec. 1958, 23 Dec. 1958, 26 Dec. 1958, 27 Dec. 1959, 4 Jan. 1960, 28 Jan. 1960, 14 Feb. 1960, 5 Mar. 1960, 25 Mar. 1960, 24 Apr. 1960, 5 May 1960, Jan. 1968, one specimen

without date) (CNCI, HMTTC). Additional specimen, SURINAM (Suriname: Republiek, 45 km S. Paramaribo, 13-19 Oct. 1963, D. C. Geijskes) (HMTTC).

COMMENT. In females, the yellow stripe on the venter of the hind femur is sometimes quite large, occupying the lower half of the anterior face. The petiole is sometimes black, without traces of brownish-red. The postpetiole is occasionally entirely brownish-red. Occasionally the hind tarsus has yellow bands at the extreme bases of the tarsomeres.

ETYMOLOGY. The specific name derives from the type locality, the state of Santa Catarina, Brazil.

Venturia genalis, sp. nov.
(fig. 20)

DIAGNOSIS. Differs from depressa, plaumanni, catarinensis, and tetragona by the reddish-yellow ventral surface of the scape, malar space 0.7 as long as basal mandibular width, brownish-red petiole, coarse mesopleural punctation, strong median and lateral longitudinal carinae, strong transverse rugae of areola-petiolar area, and short and rectangular second lateral area.

FEMALE. Structure: 1. Malar space about 0.7 as long as basal mandibular width. 2. Antenna with 49 flagellomeres. 3. Occipital carina medially straight. 4. Ocellular distance about equal to greatest diameter of lateral ocellus; ocellar region granulosopunctate with linear depression perpendicular to median ocellus, its length about 0.8 times greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region impunctate, shining, with moderately distinct transverse rugae which are weaker in region adjacent to epomia. 6. Scutellum with anterior half coarsely rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below speculum coarse and shallow, separated by 0.3-0.5 times their diameter, on shining, weakly granulate surface; upper anterior corner of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeal carinae (fig. 20) high and strong, slightly irregular in height and outline. Areola impunctate and shining with rugae intruding laterally; petiolar area with strong transverse rugae. 11. Ovipositor about 1.9 times as long as hind femur. Color: Black, the following pale yellow: mandible except for dark brown of apex and base; palpi; tegula; fore and middle legs except for dark brown of extreme apices of coxae and light brown of apical tarsomeres; apex and dorsal stripe of hind coxa; hind trochanters. Scape and pedicel reddish-yellow except for brown of dorsal surfaces. Hind femur reddish-brown except for narrow yellow ventral stripe. Hind tibia and tarsus dark brown, tibia with lighter brown median annulus about 0.6 of its length. Hind tibial spurs yellow. First metasomal segment brownish-red except for fuscous tinges along basal 0.5 of petiole. Basal 0.7 of second tergum, basal 0.3 of third tergum, and midlines of remaining terga, fuscous; terga otherwise brownish-red. Length: 14.2

mm; fore wing 8.2 mm; ovipositor 4.7 mm.

MALE. Unknown.

TYPE MATERIAL. Female holotype, BRAZIL (Santa Catarina: Nova Teutonia, 300-500 m, 12 Dec. 1952, F. Plaumann) (HMTTC).

COMMENT. This species is unusual in having coarse mesopleural punctation and a squarish second lateral area present in the female, features that are usually found only in the males of nigriscapus and townesorum.

ETYMOLOGY. The specific name is from Latin and refers to the unusually long malar space.

Venturia tetragona, sp. nov.

(fig. 22)

DIAGNOSIS. Differs from depressa, plaumanni, catarinensis, and genalis by the yellow ventral surface of the scape, black petiole, moderate mesopleural punctation, strong median and lateral longitudinal carinae, transverse rugae of areola-petiolar area, and short and rectangular second lateral area.

FEMALE. Unknown.

MALE. Structure: 1. Malar space about 0.6 as long as basal mandibular width. 2. Antenna with 43-45 flagellomeres. 3. Occipital carina medially straight. 4. Ocellocular distance about 0.9 times greatest diameter of lateral ocellus; ocellar region granulosopunctate with linear depression composed of confluent punctures perpendicular to median ocellus, its length about equal to greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by 0.2-0.5 times their diameter; remainder of lateral region shining and polished with weak transverse rugae present along lateral margins, but absent in central area, forming smooth and punctate surface. 6. Scutellum with anterior half coarsely rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below speculum moderate, separated by 0.3-0.5 times their diameter, on shining, weakly granulate surface; upper anterior region of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with lower division coarsely rugospunctate, with several large rugae extending into center from lower anterior edge. 9. Propodeal carinae (fig. 22) high and strong, slightly irregular in height and outline. Areola impunctate and shining with rugulae intruding laterally; petiolar area with strong transverse rugae. Color: Black, the following pale yellow: ventral surface of scape and pedicel; mandible except for dark brown of base and apex; palpi; tegula; fore and middle legs except for dark brown of coxal base and yellowish-brown of tarsi (darker on apical segments); apex and dorsal stripe of hind coxa; hind first trochanter; second hind trochanter varying from yellow to dark brown. segment, which varies from yellow to dark brown. Hind femur brown with ventral surface yellow, extending 0.3 of way up lateral faces. Hind tibia and tarsus dark brown. Hind tibial spurs yellow. First metasomal segment with basal 0.8 of petiolar portion of tergum

piceous; corresponding portion of sternum with more red; rest of segment brownish-red. Basal 0.6 of second tergum, basal 0.3 and apical 0.1 of third tergum, and basal 0.3 of fifth through eighth terga, brown. Terga otherwise light brownish-red. Gonoforcep brownish-red with brown streaking. Length: 10.9-11.2 mm (10.2 mm); fore wing 6.0 mm (6.1 mm).

TYPE MATERIAL. Male holotype, ARGENTINA (Tucumán: 11 km. W. Las Cejas, 8-30 Dec. 1967, L. Stange) (HMTTC). Two male paratypes, ARGENTINA (Buenos Aires: La Plata, 30 Jan. 1966, H. and M. Townes; Misiones: San Javier, 12 Nov. 1977, C. Porter) (HMTTC, FIML).

COMMENT. The specimen from La Plata has more fuscous markings upon its metasomal terga than either of the other specimens. This is probably due to a vagary of preservation.

Extrapolation from nigriscapus and townesorum might lead one to expect that the second lateral area would be more elongate in the as yet unknown female of tetragona. The presence of a similarly modified area in the female specimen of genalis (apparently closely related to this species) and the lack of extreme sexual dimorphism in species from this branch of the cladogram makes me believe, however, that the propodeal carinae pattern is probably the same in both sexes of tetragona.

ETYMOLOGY. The specific name is from Greek and refers to the squarish second lateral area of the propodeum.

Venturia depressa, sp. nov.
(fig. 21)

DIAGNOSIS. Related to plaumanni, catarinensis, tetragona, and genalis (see cladogram), but separable by the yellow ventral surface of the scape, moderate mesopleural punctation, black petiole, weak median and lateral longitudinal carinae, and reticulate rugae of the areolar-petiolar area.

FEMALE. Structure: 1. Malar space about 0.6 as long as basal mandibular width. 2. Antenna with 44 flagellomeres. 3. Occipital carina medially straight. 4. Ocellocular distance about equal to greatest diameter of lateral ocellus; ocellar region coarsely granulosopunctate. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region impunctate, shining, with low transverse rugae which are absent in area adjacent to epomia. 6. Scutellum with anterior half coarsely rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below and in front of speculum moderate in size and separated by 0.3-0.7 times their diameter, on shining, smooth surface; upper anterior region of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeal carinae (fig. 21) as follows: basal transverse carina strong, somewhat irregular in height and outline; median and lateral longitudinal carinae barely distinguishable from rugae of lateral areas and areola-petiolar area. Areola having basal half with a few transverse rugae; rest of areola and petiolar area reticulate. 11. Ovipositor about 1.8 times as long as

hind femur. Color: Black, the following pale yellow: mandible except for brown of base and apex; palpi; ventral and outer lateral surfaces of scape; tegula; fore and middle legs except for pale brown of extreme base of coxae, brownish-yellow of fore tarsi and dark brown of middle tarsi; hind coxa on apical 0.3 and median dorsal stripe; trochanters except for brown spot on anterior face of hind first trochanter. Hind femur medially brownish-red, becoming darker at base and apex; ventral surface yellowish. Hind tibia and tarsus fuscous. Hind tibial spurs brownish. First metasomal segment black, becoming dark brownish-red on postpetiole; apex of postpetiole brownish-red. Second tergum except for apical 0.2, basal 0.4 and midline of third tergum, and midlines of fourth through seventh terga, fuscous. Terga otherwise light brownish-red. Length: 8.5 mm; fore wing 6.5 mm; ovipositor 3.8 mm.

MALE. Unknown.

TYPE MATERIAL. Female holotype, VENEZUELA (Lara: Yacambu, 7 May 1981, 1200 m, H. K. Townes) (HMTTC).

ETYMOLOGY. The specific name is from Latin and refers to the weak nature of most of the propodeal carinae.

Venturia citriscapus, sp. nov.
(fig. 23)

DIAGNOSIS. Related to *bicarinata*, *nitida*, and other species (see cladogram); may be distinguished by the reddish-yellow ventral surface of the scape, moderately granulate mesopleurum and scutellum, brownish-red hind femur and petiole, and rugosopunctate lower division of the metapleurum.

FEMALE. Structure: 1. Malar space about 0.6 times as long as basal mandibular width. 2. Antenna with 41-45 flagellomeres. 3. Occipital carina medially arched. 4. Ocellocular distance about equal to greatest diameter of lateral ocellus; ocellar region coarsely granulosopunctate with linear depression composed of confluent punctures perpendicular to median ocellus, its length about 0.7 times greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate; punctures separated by about 0.3 times their diameter; remainder of lateral area impunctate, shining, usually with strong transverse rugae in upper posterior region, those in median area adjacent to epomia either weaker or without traces of rugae. 6. Scutellum with anterior half coarsely rugosopunctate. 7. Mesopleurum punctate, punctures in central region immediately below speculum separated by 0.2-0.8 times their diameter, on shining, weakly to moderately granulate surface; upper anterior region of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with lower division coarsely rugosopunctate. 9. Propodeal carinae (fig. 23) as follows: basal transverse carina, and portions of median longitudinal carina apicad to it, strong and regular; remaining carinae varying in appearance from nearly as distinct as basal transverse carina to resembling rugae of petiolar area, in all cases irregular in height and outline. Areola basally smooth with few to many

transverse rugulae, occasionally with longitudinal rugae, area immediately adjacent to carinae depressed relative to center; petiolar area ranging from either containing all transverse rugae, or being basally reticulate and apically striate; see remarks for synapomorphy no. 12. 11. Ovipositor about 1.8 times as long as hind femur. Color: Black, the following pale yellow: mandible except dark brown of base and apex; palpi; tegula; fore and middle legs except dark brown of extreme bases of coxae, and yellowish-brown tarsi; hind trochanters. Scape and pedicel ventrally reddish-yellow. Hind coxa with extreme apex yellow, and brownish-yellow dorsal median stripe. Hind femur and tibia brownish-red, femur lighter in color ventrally and tibia occasionally with lighter areas medially. Hind tibial spurs light brown. Hind tarsi brown. First metasomal segment brownish-red, petiole with darker areas bordering suture and basal 0.5 of dorsum. Apical 0.7 of second tergum, basal 0.4 of third tergum, and midlines of remaining terga, fuscous; terga otherwise light brownish-red. Length: 9.6-13.0 mm (11.9 mm); fore wing 4.7-6.1 mm (5.9 mm); ovipositor 3.1-4.3 mm (4.0 mm).

MALE. Unknown.

TYPE MATERIAL. Female holotype, BRAZIL (Parana: Campina Grande, 17 Feb. 1966, H. and M. Townes) (HMTTC). Twenty-two female paratypes, BRAZIL (Guanabara: Reprêsa Rio Grande, May, June, Oct., Dec. 1967, Nov. 1968, Oct.-Nov. 1970, M. Alvarenga; Parana: same data as holotype, except collected 15 Feb. 1966 and 19 Feb. 1966, H. and M. Townes; Santa Catarina: Nova Teutonia, 300-500 m, 15 May 1939, 7 Dec. 1952, 25 Nov. 1953, 10 Jan. 1956, 14 Feb. 1956, 19 Jan. 1959, F. Plaumann; Sao Paulo: Teodoro Sampaio, Aug. 1973, F. M. Oliveira) (CNCI, HMTTC).

COMMENT. In some specimens, the median longitudinal carinae weakly diverge at their midpoints.

The following variations in color have been observed: the fore and middle coxae may have the ventral 0.5 light brown; the ventral yellow regions of the hind coxa may be very reduced; the hind first trochanter may be brownish-yellow; the basal 0.5-0.8 of the petiole may be deep reddish-black; the fuscous midlines of terga 4-7 may be considerably extended laterally.

Differences in the state of preservation seem to influence the color of specimens: those appearing oily or greasy will show darker brownish-red areas on the metasoma. The color of the petiole is especially sensitive to this influence.

ETYMOLOGY. The specific name is formed from the Latin words, citrus, orange, plus scapus, referring to the antennal scape. It is a noun in apposition.

Venturia bicarinata, sp. nov.
(fig. 24)

DIAGNOSIS. Related to citriscapus, nitida, tezcatlipocai, and other species (see cladogram); the reddish-yellow ventral surface of the scape, weakly granulate mesopleural surface, scutellum with irregular lateral carinae extending its length, punctate lower division of the metapleurum, largely black fore and middle coxae, and pattern of the

propodeal carinae, distinguish this species from its relatives.

FEMALE. Structure: 1. Malar space about 0.6 as long as basal mandibular width. 2. Antenna with 44 flagellomeres. 3. Occipital carina medially arched. 4. Ocellocular distance about equal to greatest diameter of lateral ocellus; ocellar region coarsely granulosopunctate with linear depression composed of confluent punctures perpendicular to median ocellus, its length about equal to greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by 0.3-0.5 times their diameter; remainder of lateral region shining and impunctate, without transverse rugae except for traces at edges. 6. Scutellum with anterior half coarsely rugosopunctate, and irregular lateral carinae extending its length. 7. Mesopleura punctate, punctures in central region immediately speculum moderate in size and separated by 0.5-0.7 times their diameter, on shining, weakly granulate surface; upper anterior of mesopleura immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleura with lower division coarsely punctate. 9. Propodeal carinae (fig. 24) with basal transverse carina somewhat stronger than others; areola and petiolar area with strong transverse rugae; see remarks for synapomorphy no. 12. 11. Ovipositor about 2.1 times as long as hind femur. **Color:** Black, the following pale yellow: mandible except for brown of base and apex; palpi; tegula; trochanters; apical 0.3 of fore and middle coxae; femora and tibiae of fore and middle legs; apical 0.2 of hind coxae. Fore and middle tarsi brownish-yellow. Ventral surfaces of scape and pedicel reddish-yellow. Hind femur and tibia brownish-red except for ventral yellow stripe of femur and ill-defined pale sub-basal annulus of tibia. (Hind tarsi missing). Hind tibial spurs brownish-yellow. First metasomal segment black; apex of postpetiole deep brownish-red. Apical 0.7 of second tergum, basal 0.2 and midline of third tergum, and midlines of fourth through seventh terga, fuscous. Terga otherwise deep brownish-red. **Length:** 10.6 mm; fore wing 5.7 mm; ovipositor 3.8 mm.

MALE. Unknown.

TYPE MATERIAL. Female holotype, PARAGUAY (Pirapo: 29 Dec. 1971, L. Peña) (HMTc).

COMMENT. Color of terga probably deeper than in life, due to post-mortem changes.

ETYMOLOGY. The specific name is from Latin and refers to the scutellar carinae.

Venturia nitida, sp. nov.
(fig. 25)

DIAGNOSIS. Related to *citriscapus*, *bicarinata*, *tezcatlipocai*, and other species (see cladogram); it may be distinguished by the (usually) striate lateral region of the pronotum, weakly (if at all) granulate mesopleurum, smooth surface of scutellum, coarsely punctate lower division of the metapleurum, fuscous hind femur, and shape of the first metasomal segment.

FEMALE. Structure: 1. Malar space about 0.5 as long as basal mandibular width. 2. Antenna with 39-42 flagellomeres. 3. Occipital carina medially arched. 4. Ocellocular distance about equal to greatest diameter of lateral ocellus; ocellar region granulosopunctate with impunctate shining groove perpendicular to median ocellus, its length about equal to greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region coarsely rugosopunctate, punctures separated by about 0.3 times their diameter; remainder of lateral region with moderate to weak transverse rugae, some populations with rugae absent adjacent to upper posterior corner. 6. Scutellum with anterior half coarsely punctate, surface granulation absent. 7. Mesopleurum punctate, punctures in central region immediately below speculum separated by 0.3-0.5 times their diameter or occasionally confluent, on shining, weakly granulate or smooth surface; upper anterior region of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with upper 0.6 of lower division coarsely and deeply punctate, punctures separated by about 0.3 times their diameter; lower 0.4 rugosopunctate. 9. Propodeal carinae (fig. 25) as follows: basal transverse carina strong and regular in height and outline; other carinae (excluding pleural carina) weaker and irregular in height and outline, but always distinguishable from other propodeal sculpturing; in some populations, median and lateral longitudinal carinae absent in parts; see remarks for synapomorphy no. 12. Areola impunctate with some rugulae extending from lateral edges; petiolar area reticulate, sometimes apically with strong transverse rugae. 11. Ovipositor about 1.7 times as long as hind femur. Color: Black, the following pale yellow: mandible except for brown of base and apex; palpi; tegula; fore and middle legs except for dark brown of extreme bases of coxae, and brownish-yellow tarsi. Scape and pedicel fuscous, in some cases becoming reddish-yellow or yellow at apices or even lateral and outer ventral surfaces. Hind first trochanter yellow, sometimes with brown on anterior and dorsal surfaces. Hind femur, tibia, and tarsus usually dark brown except for yellow on extreme base of femur; some populations with femur and tibia light brownish-red, or with femur light brownish-red and tibia dark brown. Hind tibial spur yellow. First metasomal segment black, postpetiole with apical 0.3 brownish-red. Basal 0.8 of second tergum, basal 0.3 and midline of third tergum, and midlines of remaining terga fuscous; terga otherwise light brownish-red. Length: 9.0-9.4 mm (8.2 mm); fore wing 4.4-5.0 mm (4.4 mm); ovipositor 2.7-3.7 mm (2.8 mm).

MALE. Structure: Similar to female except that relative strengths of propodeal carinae stronger and more well developed; areola and petiolar area with well-developed transverse rugae. Color: Similar to female and subject to same variations in color, except that all of second tergum (except extreme lateral corners) and third tergum, plus midlines and portions of dorsal lateral areas of remaining terga, fuscous. Gonoforcep brownish-red. Length: 9.3-10.7 mm (8.7 mm); fore wing 4.1-5.2 mm (4.1 mm).

TYPE MATERIAL. Female holotype, UNITED STATES (Arizona: Cochise Co., Parker Canyon Lake, 22 Aug. 1974, H. and M. Townes) (HMTTC). Al-

holotype, same data as holotype (HMTTC). Three female and one male paratypes, same collection data as holotype except collected 20 Aug. 1974 and 22 Aug. 1974, and one male paratype collected from Portal (Cochise Co.), 13 Aug. 1974 (HMTTC). Other specimens from ARGENTINA (Tucumán: San Pedro de Calalao, Jan. 1968, L. Stange); BRAZIL (Pernambuco: Caruaru, April-June 1972, 900 m, J. Lima; Santa Catarina: Nova Teutonia, 300-500 m, 21 Mar. 1947, 21 April 1952, 19 Feb. 1954, F. Plaumann); COLOMBIA (Valle del Cauca: Cali, Oct. 1971, M. J. West-Eberhard); COSTA RICA (Guanacaste: Santa Rosa Park, 3 July 1977, 12 Sept. 1977, 17 Sept. 1977, 8 Oct. 1977, 11 June 1978, 28 July 1978, "dry hill", D. H. Janzen); MEXICO (Michoacan: 9 miles NW Hidalgo, 20 August 1962, 7100 ft., R. H. and E. M. Painter); VENEZUELA (Zulia: Tucuco, 23 April 1981, H. K. Townes) (HMTTC).

DISTRIBUTION. Southern Arizona to Brazil and northern Argentina.

COMMENT. In males, the lower division of the metapleurum can be weakly rugosopunctate.

ETYMOLOGY. The specific name is from Latin and refers to the weakly granulate surface of the mesopleurum.

Venturia tezcatlipocai, sp. nov.
(fig. 26)

DIAGNOSIS. Differentiated from the related bicarinata, nitida, citricapus, and other species (see cladogram) by the reddish-yellow ventral surface of the scape, smooth surfaces of the mesopleurum and scutellum, striate lateral region of the pronotum, coarsely punctate lower division of the metapleurum, fuscous hind femur, and propodeal pattern.

FEMALE. Structure: 1. Malar space about 0.6 as long as basal mandibular width. 2. Antenna with 39 flagellomeres. 3. Occipital carina medially arched. 4. Ocellocular distance about 1.2 times greatest diameter of lateral ocellus; ocellar region granulosopunctate with shining linear depression perpendicular to median ocellus, its length about 0.8 times greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral coarsely rugosopunctate, punctures separated by 0.3-0.5 times their diameter; upper posterior corner with spaces between punctures without granulation. Remainder of lateral area shining and impunctate with low transverse rugae; rugae in area adjacent to epomia and upper posterior corner fused, area appearing smooth and shining. 6. Scutellum with anterior half coarsely punctate, surface granulation absent. 7. Mesopleurum punctate, punctures in central region immediately below speculum separated by 0.5-0.7 times their diameter, on smooth and shining surface; upper anterior region of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with upper 0.6 of lower division coarsely punctate, punctures separated by about 0.3 times their diameter; lower 0.4 coarsely rugosopunctate. 9. Propodeal carinae (fig. 26) strong and regular except for weak lateral longitudinal carina. Areola impunctate and shining, with few rugae intruding

laterally; petiolar area with strong transverse rugae except in median strip in basal 0.3, which is depressed and shining. 11. Ovipositor about 1.9 times as long as hind femur. Color: Black, the following pale yellow: palpi; mandible except for dark brown of base and apex; tegula; fore and middle legs except for dark brown of apical 0.2 of coxae and yellowish-brown of apical tarsomeres; apical 0.3 of hind coxa; hind trochanters except for brown of dorsal and anterior faces of first. Scape and pedicel ventrally reddish-yellow with brown streaks. Hind femur, tibia, and tarsi, brown. Hind tibial spurs yellow. First metasomal segment black, postpetiole with apical 0.5 deep brownish-red. Second tergum except apical 0.1, third tergum except lower lateral regions, and midlines of fourth through eighth terga, fuscous; terga otherwise light brownish-red. Length: 9.3 mm; fore wing 4.7 mm; ovipositor 3.1 mm.

TYPE MATERIAL. Female holotype, MEXICO (San Luis Potosí: Tamazunchale, 23 Nov. 1946, E. S. Ross) (CASC).

ETYMOLOGY. This species is named for the Aztec god Tezcatlipoca; the translation "Smoking Mirror" is an oblique reference to the polished black mesopleurum.

Venturia catoptron, sp. nov.
(fig. 3,4,28)

DIAGNOSIS. Related to compressa and other species (see cladogram), it may be recognized by the yellow ventral surface of the scape, absence of striae on the lateral region of the pronotum, smooth mesopleural surface, coarsely punctate lower division of the metapleurum, fuscous hind femur, and convex sternum of the first metasomal segment.

FEMALE. Structure: 1. Malar space about 0.6 as long as basal mandibular width. 2. Antenna with 41 flagellomeres. 3. Occipital carina medially arched. 4. Ocellocular distance about 0.7 times greatest diameter of lateral ocellus; ocellar region granulosopunctate with linear depression composed of confluent punctures perpendicular to median ocellus, its length about 0.7 times greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region punctate, punctures separated by about 0.3 times their diameter; upper posterior corner having spaces between punctures without granulation; remainder of lateral area shining and impunctate, without transverse rugae, except for weak traces in lower posterior corner. 6. Scutellum with anterior half punctate, surface granulation absent. 7. Mesopleurum punctate, punctures in central region immediately below speculum separated by 0.3-0.5 times their diameter, occasionally confluent or separated by their diameter, on extremely smooth and shining surface with little or no granulation; upper anterior region of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with upper 0.7 of lower division coarsely punctate, punctures separated by about 0.5 times their diameter; lower 0.3 rugosopunctate. 9. Propodeal carinae (fig. 28) as follows: basal transverse carina always present,

somewhat irregular in height and outline; other carinae weaker although always present and distinguishable from other propodeal sculpture. Areola smooth and without rugulae and with deep punctures present along lateral margins; petiolar area with transverse rugae, although sometimes reticulate in basal half; see remarks for synapomorphy no. 12. 10. Sternum of first metasomal segment convex in profile (fig. 3). 11. Ovipositor about 1.9 times as long as hind femur. Color: Black, the following pale yellow: mandible except for brown of base and apex; palpi; ventral surfaces of scape and pedicel; tegula; fore and middle coxae except for pale brown of extreme base; hind coxa at apex and median dorsal stripe; trochanters except for dark brown of hind first trochanter. Fore and middle legs with femora, tibiae, tibial spurs, and tarsi (except brown of basal 0.3 of ventral surface of middle femur and apical segment of middle tarsus), yellow with brownish tinge. Hind femur, tibia, and tarsus, fuscous. Hind tibial spurs yellow. First metasomal segment black except for brownish-red at apical 0.2 of postpetiole. Second tergum except for apical 0.15, basal 0.3 and midline of third tergum, and midlines and dorsal 0.3 of lateral surfaces of third through seventh terga, fuscous. Terga otherwise deep brownish-red. Length: 9.8-10.6 mm (10.4 mm); fore wing 4.4-4.7 mm (4.6 mm); ovipositor 3.3-3.6 mm (3.3 mm).

MALE. Structure: Similar to female except all propodeal carinae of equal height and strength; combined areola-petiolar area narrower than in female. Petiolar area with strong transverse rugae. Color: As in female, except all of second tergum, and dorsal 0.5 of lateral surfaces of third through seventh terga, fuscous. Gonoforcep fuscous. Length: 9.3-9.8 mm (10.1 mm); fore wing 4.3 mm (4.6 mm).

TYPE MATERIAL. Female holotype, BOLIVIA (Santa Cruz: Robore, Obi-quitos, Oct. 1959, 300 m, F. H. Walz) (HMTc). Allotype, same collection data as for holotype, (HMTc). Four female and two male paratypes, same collection data as for holotype except one collected in November (HMTc).

COMMENT. The amount of fuscous coloration on the metasoma varies, apparently due to the state of preservation of the specimens. Several of the specimens in the series are quite oily in appearance and this seems to increase the amount of dark coloration in otherwise brownish-red portions of the terga.

A specimen with the same collection data as the holotype is provisionally placed in this species. It differs in the reddish-yellow color of the ventral surface of the scape, mostly yellow hind first trochanter, weakly wrinkled mesopleural surface, narrower areola-petiolar region, and less convex sternum of the first metasomal segment.

ETYMOLOGY. The specific name is a noun in apposition; it is from the Greek for mirror, in reference to the polished surface of the lateral area of the pronotum.

Venturia compressa, sp. nov.
(fig. 5,27)

DIAGNOSIS. Related to catoptron and other species (see cladogram), it may be recognized by the yellow ventral surface of the scape, absence of striae on the lateral region of the pronotum, smooth mesopleural sur-

face, long and narrow lateral region of the pronotum (fig. 5), coarsely punctate lower division of the metapleurum, fuscous hind femur, and propodeal pattern.

FEMALE. Structure: 1. Malar space about 0.6 as long as basal mandibular width. 2. (Antennae with flagella incomplete.) 3. Occipital carina medially convex. 4. Ocellocular distance about 0.8 greatest diameter of lateral ocellus; ocellar region coarsely granulospunctate with linear depression composed of confluent punctures perpendicular to median ocellus, its length about 0.6 greatest diameter of lateral ocellus. 5. Pronotum with upper margin and upper posterior corner of lateral region punctate, punctures separated by about 0.3 times their diameter; upper posterior corner with area between punctures without granulation; remainder of lateral region shining and impunctate, without transverse rugae except for traces at edges; pronotum in lateral view long and narrow (fig. 5), as opposed to broader triangular condition (fig. 4). 6. Scutellum with anterior half coarsely punctate, surface without granulation. 7. Mesopleurum punctate, punctures in central region immediately below speculum moderate in size and separated by 0.3-0.5 times their diameter, on shining, smooth surface; upper anterior region of mesopleurum immediately adjacent to scrobal groove having transverse rugae weak or absent and with few punctures, surface granulation absent so that area appears to be extension of speculum. 8. Metapleurum with upper 0.3 of lower division coarsely punctate, lower 0.7 rugosopunctate. 9. Propodeal carinae (fig. 27) with basal transverse carina strong and regular, remaining carinae somewhat weaker, with portion of lateral longitudinal carina forming outer side of second lateral area almost absent. Areola shining and impunctate, with a few small lateral rugae; petiolar area with transverse rugae. 11. Ovipositor about 1.8 times as long as hind femur (broken in paratype). Color: Black, the following pale yellow: mandible except dark brown of base and apex; palpi; tegula; fore and middle legs except for brown of extreme bases of coxae, and brownish-yellow tarsi; extreme apex and dorsal median stripe of hind coxa; distal segment of hind coxa; hind second trochanter. Ventral surfaces of scape and pedicel reddish-yellow. Hind first trochanter dark brown. Hind femur entirely dark brown, or with anterior face dark brown, ventral surface yellowish, becoming darker yellowish-brown on posterior face. Hind tibia and tarsus dark brown. Hind tibial spurs yellowish-brown. First metasomal segment black, dorsal apex and apical 0.5 of lateral faces of post-petiole brownish-red. Apical 0.7-0.9 of second tergum, midlines of third through seventh terga, fuscous; terga otherwise light brownish-red. Length: 8.5 mm (9.2 mm); fore wing 4.5 mm (5.0 mm); ovipositor (3.3 mm).

MALE. Unknown.

TYPE MATERIAL. Female holotype, PERU (Cuzco: Quincemil, nr. Marcapata, 10-15 Nov. 1962, 750 m, L. Peña) (HMTc). Female paratype, BRAZIL (Rondonia: Vilhena, Nov. 1973, M. Alvarenga) (HMTc).

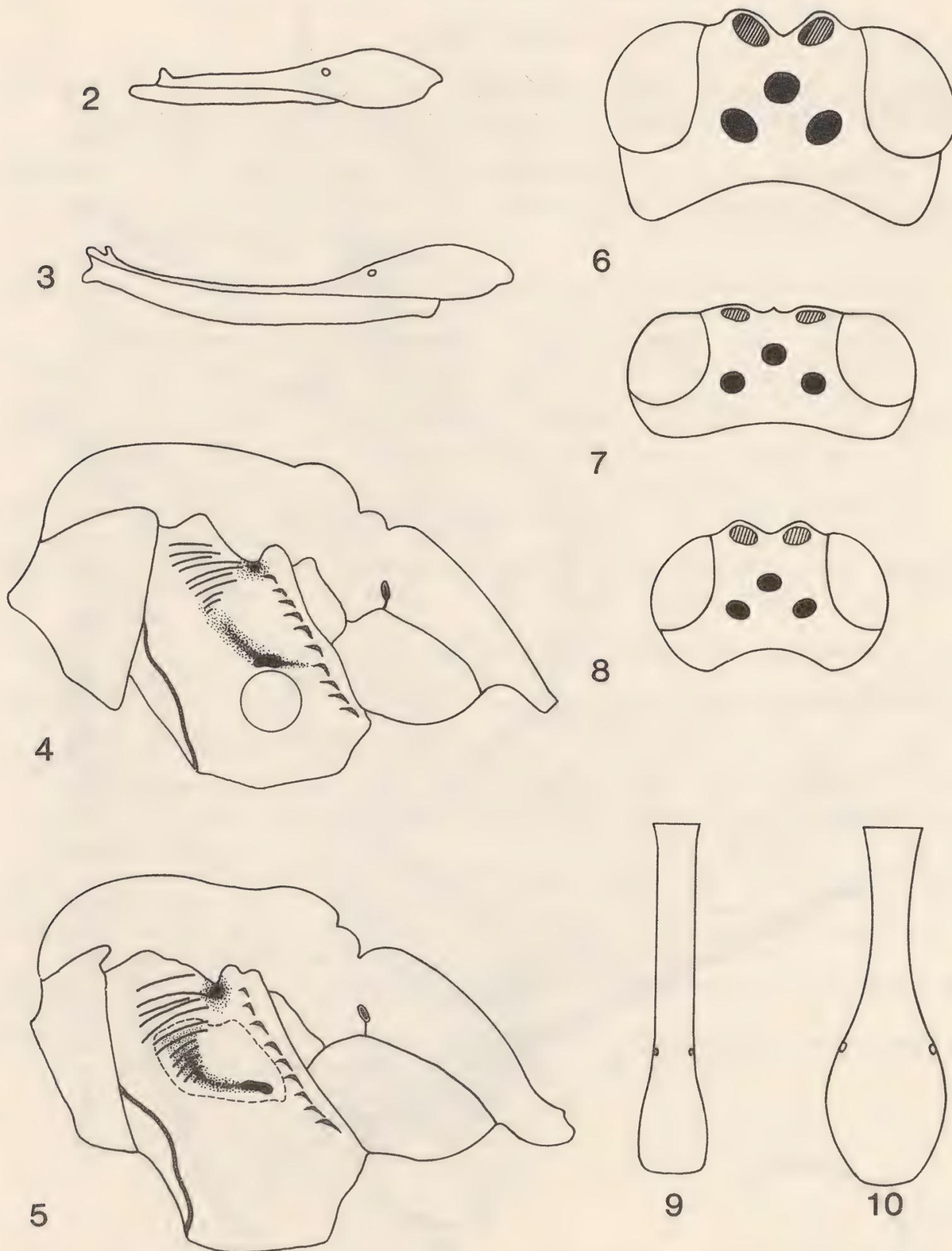
ETYMOLOGY. The specific name derives from Latin and refers to the compact shape of the lateral area of the pronotum.

LITERATURE CITED

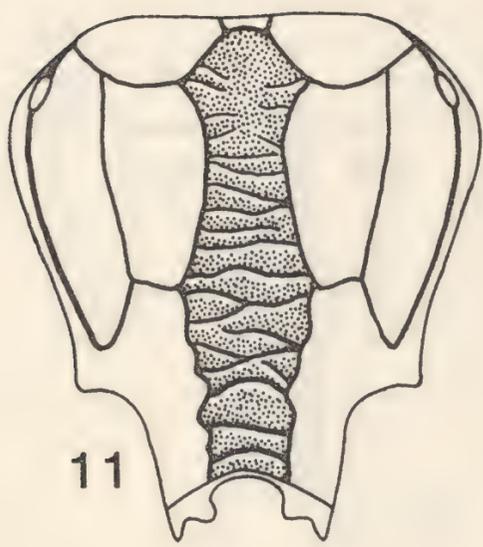
- Arnett, R. H., Jr., and G. A. Samuelson. 1969. Directory of Coleoptera Collections of North America (Canada through Panama). Cushing-Malloy, Ann Arbor, Michigan. 123 pp.
- Carlson, R. W. 1979. Family Ichneumonidae. In K. V. Krombein, P. D. Hurd, D. R. Smith, and B. D. Burks (eds.), Catalog of Hymenoptera in America North of Mexico, vol. 1, Smithsonian Institution Press, Washington, D.C. 1198 pp.
- Finlayson, T. 1975. The cephalic structures and spiracles of final-instar larvae of the subfamily Campopleginae, tribe Campoplegini (Hymenoptera: Ichneumonidae). Mem. Entomol. Soc. Canada 94: 1-137.
- Gupta, V. K. and S. Maheshwary. 1977. Ichneumologia orientalis, IV: the tribe Porizontini. Oriental Insects Monograph 4: 1-203.
- Harris, R. A. 1979. A glossary of surface sculpturing. Occas. Papers Entomol. 28: 1-31. State of California, Dept. of Food and Agriculture, Div. of Plant Industry, Sacramento.
- Hennig, W. 1966. Phylogenetic Systematics. University of Illinois Press, Urbana, Illinois. 263 pp.
- Michener, C. D. 1944. Comparative external morphology, phylogeny, and a classification of the bees. Bull. American Mus. Nat. Hist. 82: 151-326.
- Rosen, D. E. 1978. Vicariant patterns and historical explanations in biogeography. Syst. Zool. 27: 159-188.
- Short, J. R. T. 1978. The final larval instars of the Ichneumonidae. Mem. American Entomol. Inst. 25: 1-508.
- Townes, H. 1944-45. A catalogue and reclassification of the Nearctic Ichneumonidae. Mem. American Entomol. Soc. 11: 1-925.
- _____. 1969. Genera of Ichneumonidae, part 1. Mem. American Entomol. Inst. 11: 1-300.
- _____. 1970. Genera of Ichneumonidae, part 3. Mem. American Entomol. Inst. 13: 1-307.
- Watrous, L. E. and Q. D. Wheeler. 1981. The out-group comparison method of character analysis. Syst. Zool. 30: 1-11.
- Wiley, E. O. 1981. Phylogenetics. Wiley-Interscience, New York. 439 pp.
- Wilson, E. O. and W. L. Brown, Jr. 1953. The subspecies concept and its taxonomic application. Syst. Zool. 2: 97-111.



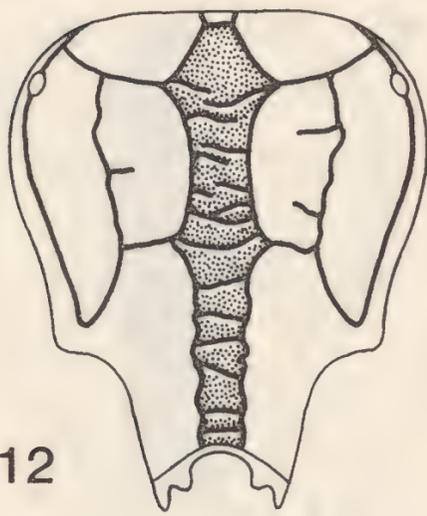
Figure 1. Habitus of V. catarinensis sp. nov.



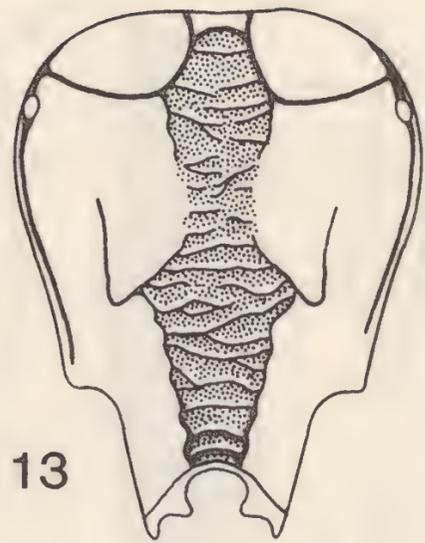
Figures 2-10. 2, Lateral view of first metasomal segment of *Venturia* sp. 3, same of *V. catoptron* sp. nov. 4, Lateral view of mesosoma of *V. catoptron* sp. nov. 5, Same of *V. compressa* sp. nov. 6, Dorsal view of head of *V. nigriscapus* (Vier.). 7-8, Dorsal views of heads of *Venturia* spp. 9-10, Dorsal view of first metasomal segments of *V. nigriscapus* and *Venturia* sp.



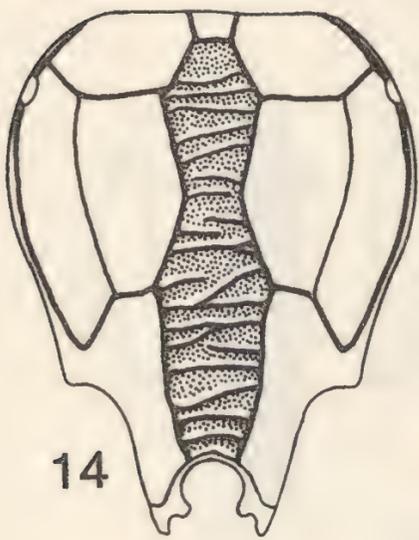
11



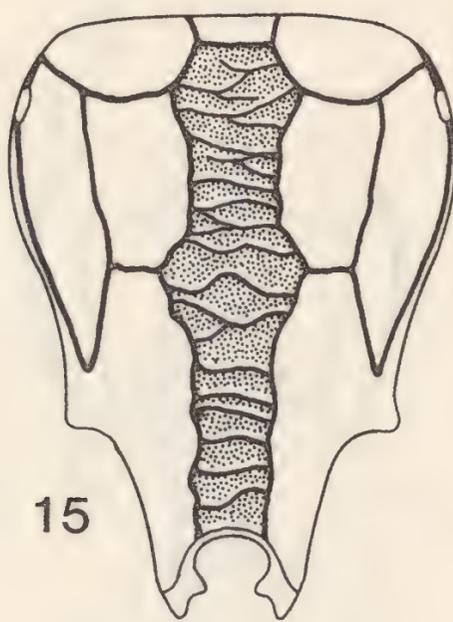
12



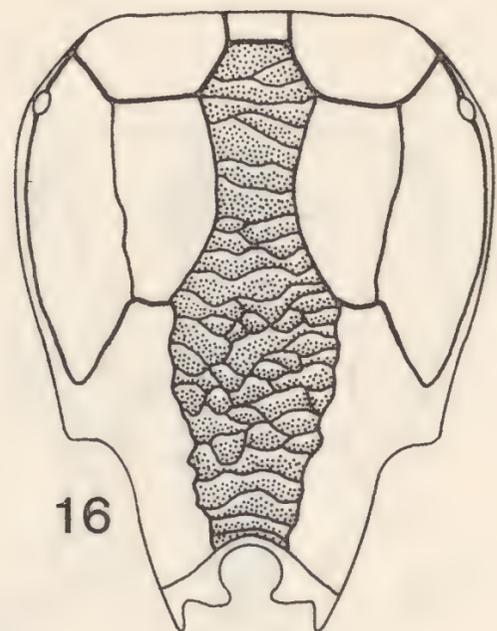
13



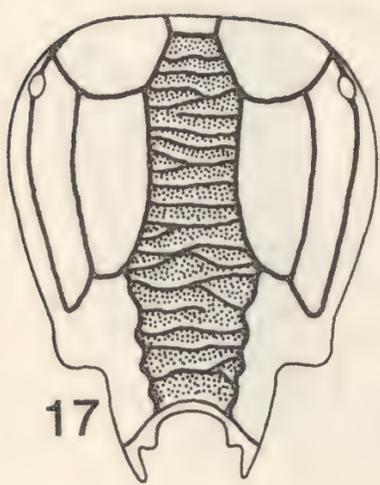
14



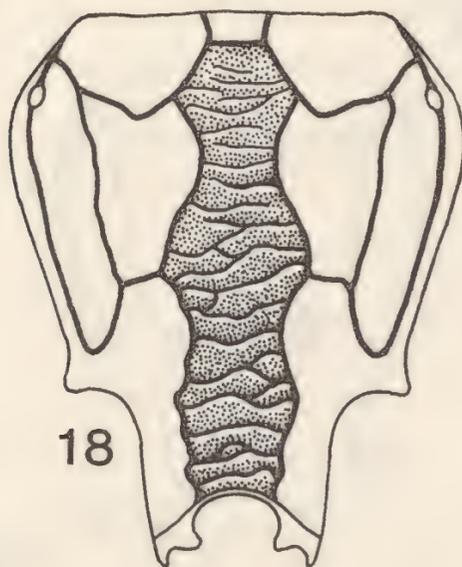
15



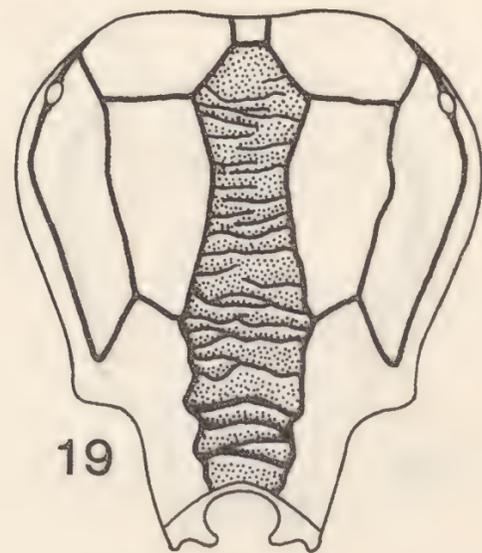
16



17

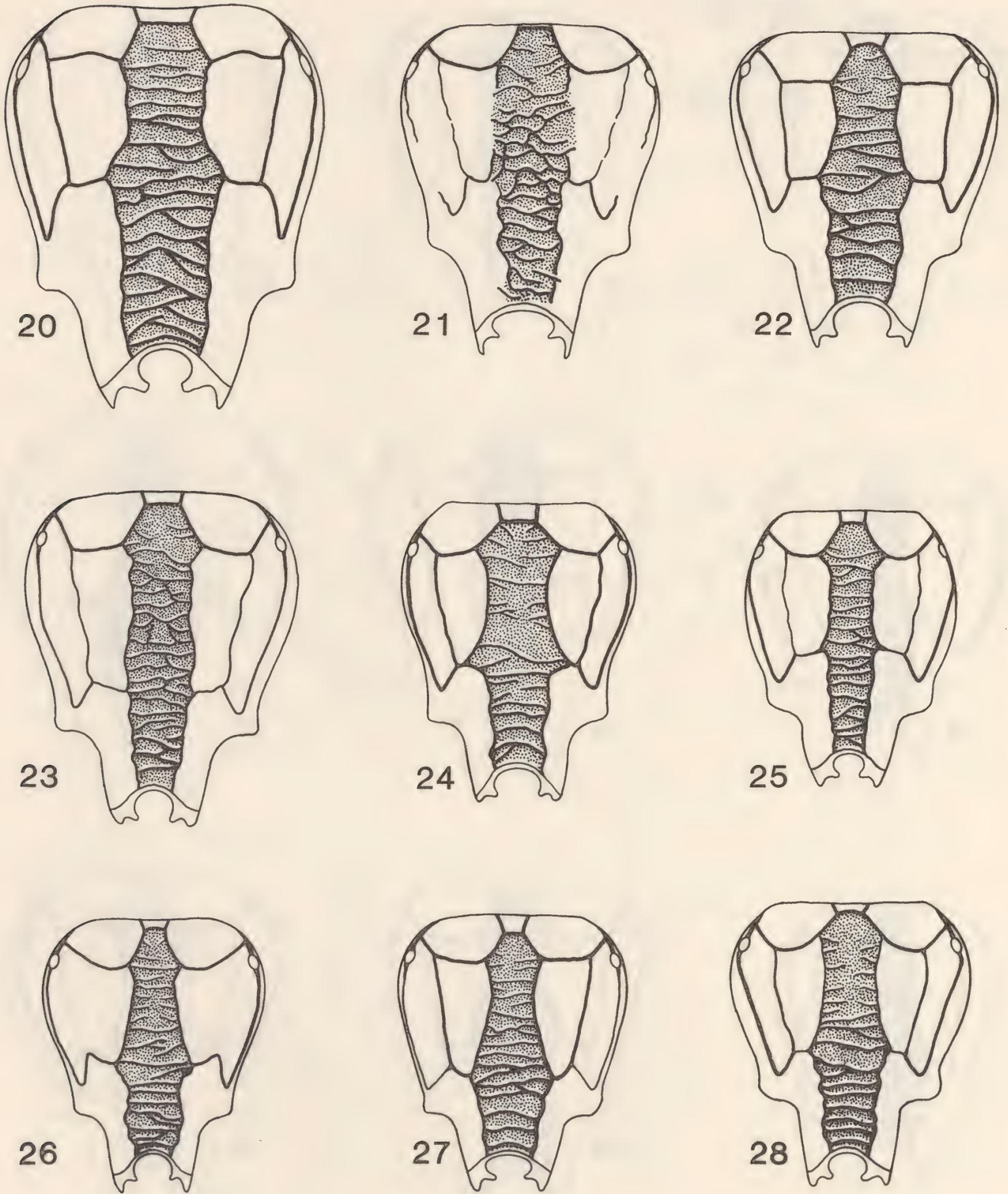


18



19

Figures 11-19. Propodea of *Nigriscapus* Group (dorsal view). 11-12, *V. nigriscapus* (Vier.), female and male. 13-15, *V. townesorum* sp. nov., female holotype, allotype, male paratype. 16, *V. musae* sp. nov. 17, *V. longicauda* sp. nov. 18, *V. catarinensis* sp. nov. 19, *V. plaumanni* sp. nov.



Figures 20-28. Propodea of Nigriscapus Group (dorsal view). 20, V. genalis sp. nov. 21, V. depressa sp. nov. 22, V. tetragona sp. nov. 23, V. citriscapus sp. nov. 24, V. bicarinata sp. nov. 25, V. nitida sp. nov. 26, V. tezcatlipocai sp. nov. 27, V. compressa sp. nov. 28, V. catoptron sp. nov.

